

Before the
Federal Communications Commission
Washington, D.C. 20554

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Federal Communications Commission
Office of the Secretary

In the Matter of)
)
Advanced Television Systems)
and Their Impact on the)
Existing Television Broadcast)
Service)
)
Review of Technical and)
Operational Requirements:)
Part 73-E, Television Broadcast)
Stations)
)
Reevaluation of the UHF Television)
Channel and Distance Separation)
Requirements of Part 73 of the)
Commission's Rules)

MM Docket No. 87-268

COMMENTS OF TIME INC.

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SUMMARY

Time Inc. generally supports the Commission's Tentative Decision. The Tentative Decision establishes pro-competitive, pro-consumer policies that will facilitate the early introduction of high quality ATV.

Most importantly, allowing each medium to provide ATV in a manner that is optimum for that medium will benefit consumers by permitting the highest quality picture and sound each medium can deliver. The development of non-broadcast ATV standards will not harm broadcasters because cost-effective "multiport" interfaces can be developed that will allow consumers to select among distribution media.

If the Commission adopts a broadcast ATV standard, it should ensure that the standard permits low-cost, high quality cable distribution. A 6 MHz broadcast ATV transmission standard would be optimal and we urge the Commission not to adopt any measure that would prematurely prejudice development of such a standard.

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COMMENTS OF TIME INC.

Time Inc. submits these comments in response to the Commission's Tentative Decision and Further Notice of Inquiry ("Tentative Decision") in the above-captioned proceeding, released September 1, 1988. Time Inc. owns Home Box Office ("HBO"), the premier satellite-delivered pay program service, and is the majority stockholder of the nation's second-largest cable multiple system operator, American Television and Communications Corporation ("ATC").

I. Introduction

For several years, Time Inc., ATC and HBO have spent considerable time and resources analyzing the technical, economic and consumer issues related to advanced television service (ATV). We have vigorously promoted the development of ATV and the wide-

ranging and important benefits it will bring to American consumers.

Time Inc. believes it is crucial that ATV be developed in a way that benefits the 46 million U.S. homes that receive their television over cable. The introduction of ATV must be accomplished in a way that maximizes the benefits to these cable consumers without imposing unreasonable costs.

Time Inc. has been aggressively pursuing this goal. HBO has funded research by the Massachusetts Institute of Technology on a cable optimized ATV transmission system. Also, the National Cable Television Association (NCTA) has established a Blue Ribbon Committee that is identifying the key elements of a cable ATV transmission standard and analyzing current ATV proposals to determine their suitability for cable delivery. In addition, both ATC and HBO are members of the Center for Advanced Television Studies, which is involved in television research, and actively participate in the Commission's Advisory Committee on Advanced Television Service ("Advisory Committee").¹ Finally, ATC is a founding member of Cable Television Laboratories ("Cable Labs"). One of Cable Labs' first major projects is ATV research

¹ ATC Chairman and Chief Executive Officer, Joe Collins, is a member of the Advisory Committee and HBO Senior Vice President of Technology & Operations, Ed Horowitz, is Chairman of Working Party 4 of the Planning Subcommittee of the Advisory Committee.

and developmental testing.²

Time Inc. generally supports the conclusions in the Commission's Tentative Decision. We believe the pro-competitive policies the Commission has adopted will benefit consumers by fostering the introduction of significantly higher quality television pictures and sound. Most importantly, the Commission recognized that consumers today receive their video programming from a variety of distribution media and, therefore, concluded that each medium should be permitted to provide ATV in a manner that is optimum for that medium. This policy will ensure that each medium has the flexibility to provide the highest quality service to consumers. The Commission's Advisory Committee reached the same conclusion and we support the Committee's work as well.

In these comments, Time Inc. provides additional policy and technical support for the Commission's conclusions in the Tentative Decision, focusing primarily on the following points:

- 1) as noted above, the Commission's decision not to impose a single ATV transmission standard for all media will benefit consumers by allowing each distribution medium to achieve its

² ATC Vice President of Technology, Walt Ciciora, is director of ATV projects for Cable Labs and HBO Senior Vice President Ed Horowitz serves on the Steering Committee for the Technical Advisory Committee for Cable Labs.

highest potential quality;

2) the development of a non-broadcast ATV transmission standard will not harm consumers or broadcasters because cost-effective "multiport" interfaces will enable consumers to select among distribution media, including broadcast, cable, satellite and VCR, without detriment to any particular medium; a considerable amount of attention in these comments is devoted to providing the Commission with technical and policy assistance on this point;

3) it is in the interests of consumers, broadcasters and cable operators that any Commission-mandated broadcast ATV standard permit low cost, high quality cable retransmissions of broadcast signals; to accomplish this goal, each proposed broadcast transmission standard should be fully tested for cable and satellite distribution; and

4) a 6 MHz broadcast ATV transmission system would be optimal for consumers, broadcasters and cable operators; since over half of all consumers now receive their broadcast signals via cable, the Commission should attempt to avoid the significant technical problems that would occur with cable distribution of broadcast signals of greater than 6 MHz.

II. The Public Interest Requires That Any Broadcast ATV
Transmission Standard Be Compatible With Cable
Distribution

In the Tentative Decision, the Commission indicated that "the public interest compels a Commission role in the development of standards" for broadcast transmission of ATV.³ The Commission also noted its intention to exercise that role "with the advice and involvement of all sectors of the industry."⁴ If the Commission, in conjunction with the broadcast industry, determines that a mandatory broadcast standard is necessary, it should recognize that such a standard must be consistent with low cost and high quality cable distribution without interference to other services.⁵

Nearly 53 percent of U.S. homes now receive their television programming, including broadcast signals, through cable television.⁶ The vast majority of broadcast signals in this country are distributed by one of more cable television

³ Tentative Decision at para. 113.

⁴ Id.

⁵ As stated in our earlier comments in this proceeding, Time Inc. believes any broadcast HDTV transmission standard must allow cable distribution of a broadcast signal that is at least as good as over-the-air viewers could receive in the Grade A contour of the station. Comments of Time Inc. in MM Docket No. 87-268, filed Nov. 18, 1987 at 12 ("Time Inc. Comments").

⁶ Broadcasting, Oct. 24, 1988 at 12.

systems.⁷ It would be contrary to the public interest for the Commission to adopt a broadcast transmission standard that imposed serious economic or technical constraints on cable systems which deliver those signals. Consumers, broadcasters and cable operators have benefitted from widespread cable carriage of broadcast signals. If the symbiotic relationship between the cable and broadcast industries is to be maintained, any mandated broadcast transmission standard must permit cable distribution without significant additional cost or interference to other services being delivered by cable.

In order to achieve this result and allow the cable industry to continue to deliver high quality broadcast signals to consumers, any proposed broadcast transmission standard must be fully tested for cable and satellite distribution. Working Party 2 of the Planning Subcommittee of the Commission's Advisory Committee has been developing specifications for testing and evaluation of proposed broadcast transmission standards. The Advisory Committee noted in its Interim Report that "tests for the proponent systems also should be conducted on cable television, satellites and other terrestrial distribution media."⁸ Working Party 4 of the Planning Subcommittee of the

⁷ See generally, "Broadcast Station Carriage Survey," Report of the National Cable Television Association (survey conducted by Price Waterhouse), Sept. 1988.

⁸ Advisory Committee Interim Report at 16 (n.8).

Advisory Committee has begun developing test plans for cable television and we support that effort. In addition, the NCTA Engineering Committee's ATV Subcommittee is developing a test plan for proposed transmission standards, and that effort should provide results that will be useful in the Commission's decisionmaking process. Also, Cable Labs will soon begin cable testing of proposed ATV systems.

III. The Commission's Tentative Decision Not to Impose a Single ATV Transmission Standard on All Distribution Media Is In the Public Interest

In its Tentative Decision, the Commission concluded that it would not be in the public interest to impose a single ATV transmission standard on all media.⁹ Recognizing that consumers will benefit if each delivery medium is allowed to provide ATV in the most efficient manner for that medium, the Commission said it does "not intend to retard the introduction of ATV on non-broadcast media, nor do we intend at this point to require compatibility among the various media or set specific signal or equipment standards for this purpose."¹⁰ Time Inc. strongly agrees with this pro-consumer approach.

⁹ Tentative Decision at para. 4.

¹⁰ Id. at para. 133.

A fundamental goal for the Commission is to facilitate an environment in which consumers are able to obtain the best possible picture and sound quality.¹¹ Similarly, each distribution medium strives to maximize its picture and sound quality for its customers. A single mandatory transmission standard that cuts off quality improvements at the level achievable by the least capable distribution medium is inconsistent with this goal. Congress and the Commission established policies that permitted the development of several different video distribution media. Consumers today choose among these media. It would be incongruous for the Commission now to adopt a policy that artificially limits the quality any one of these media could achieve. It would not serve the public interest to adopt policies that, in effect, tell certain consumers that they will have to settle for inferior picture quality. The Commission has wisely rejected such an approach and Time Inc. supports that decision.

In our previous comments in this proceeding, Time Inc. supported the efforts of broadcasters to improve the quality of their signal. In part, our support was premised on the view that such improvements would be necessary to meet the challenge of competitive technologies. The same principle applies to the cable industry. The Commission has repeatedly found that cable

¹¹ See generally, 47 U.S.C. Sections 151, 303 (g), and 521.

exists in a highly competitive environment.¹² One of the areas in which media compete for viewers' attention is technical quality, i.e., who can deliver the best picture and sound. In fact, one of the original purposes of the cable industry was to improve picture quality. The cable industry should not now have its hands tied by artificial regulations designed to protect another competitive distribution medium. Rather, the cable industry should be free to maximize the quality it can deliver to consumers.

The Commission's ATV Advisory Committee supported this conclusion, finding that "No attempt should be made to retard the introduction of advanced television systems over non-broadcast media."¹³ The National Telecommunications and Information Administration (NTIA) also agrees with this approach. In supporting Commission adoption of a broadcast ATV

¹² See generally, FCC News, "FCC Issues Policy Statement Reducing Scope and Applicability of Cross-Interest Policy," rel. Oct. 27, 1988 (The existence of a "plethora of media services" undercuts any need to retain certain ownership restrictions.); Syndicated Program Exclusivity, FCC 88-180, para. 43, rel. July 15, 1988, appeal docketed sub nom., United Video, Inc. v. FCC, No. 88-1514 (D.C. Cir. filed July 20, 1988); Scrambling of Satellite TV Signals, 3 FCC Rec. 1202, 1206-8 (1988); Instructional TV Fixed Service, 94 FCC 2d 1203, 1228 (1983), recon. denied, 98 FCC 2d 129 (1984); Low Power Television Service, 51 RR 2d 476, 480 (1982), recon. denied, 53 RR 2d 1267 (1983); Direct Broadcast Satellites, 90 FCC 2d 676, 706-7, 712-13 (1982), recon. denied, 94 FCC 2d 741 (1983), aff'd sub nom., National Association of Broadcasters v. FCC, 740 F.2d 1190 (D.C. Cir. 1984); Subscription TV Service, 90 FCC 2d 341, 347-8 (1982).

¹³ Advisory Committee Interim Report at 9.

transmission standard, NTIA was clear that such a standard should not be imposed on non-broadcast media: "It is also important to understand that...we do not mean that the FCC should establish an ATV transmission standard for any other video distribution systems...."¹⁴ Also significantly, neither of the principal broadcast trade associations -- the National Association Broadcasters and the Association of Independent Television Stations -- advocated a single ATV transmission standard for all media.¹⁵

The Commission's decision to give each distribution medium the flexibility to provide ATV in a manner best suited to the characteristics of that medium will ensure that U.S. consumers do not have to settle for inferior picture and sound quality. The decision is pro-consumer and pro-competition. It should be strongly reaffirmed in this proceeding.

¹⁴ Letter from Alfred C. Sikes, Assistant Secretary for Communications and Information (NTIA), U.S. Department of Commerce, to Joseph Collins, President of Home Box Office, Inc. (Dec. 24, 1987) at 3 (Joseph Collins is now Chairman and Chief Executive Officer of ATC.).

¹⁵ See Comments of National Association of Broadcasters in MM Docket No. 87-268, filed Nov. 15, 1987; Comments of Association of Independent Television Stations in MM Docket No. 87-268, filed Nov. 18, 1987.

IV. Cost-Effective, Consumer-Friendly, ATV Multiport Interfaces Will Develop Without Regulation and Will Permit Alternate Media to Deliver High Quality ATV to the Public Without Delay and With No Harm to Broadcasters

If an ATV marketplace standard for non-broadcast media develops, it will not result in harm to the broadcast media because standard television set interfaces can be adapted to accommodate different ATV systems, or standards of transmission. These multiport interfaces, or connectors, will be cost-effective, consumer-friendly, and developed without government involvement, as the Commission suggested in its Tentative Decision.¹⁶ While there are other means of accommodating different ATV systems, they are more expensive and involve greater delay in the introduction of ATV for consumers.

There are essentially three ways that different ATV systems signals can be accommodated at the television set level: (1) "open architecture"; (2) space, or receptacles, in the television set for each ATV signal; and (3) the "multiport" interface, or connector. Following is an analysis of each approach.

An "open architecture" approach to accommodating different ATV signals, or systems, in the television set requires building

¹⁶ Tentative Decision at para. 133.

into the set all the intelligence (processing) necessary to discern any incoming signal format, whatever the source. Each signal format is read, or processed by a single circuit card, or by a card containing complex signal circuitry capable of reading various formats. "Open architecture" television sets would have built into them all such circuit cards (or complex processing circuitry) from the outset. This processing capability, of course, comes with a price tag -- first to the manufacturer and ultimately to the consumer. Manufacturers are generally unwilling to add cost to a television set without the expectation that, in a competitive marketplace, that cost will be recouped. Each five dollars of cost to the manufacturer can be translated into \$16 to \$20 in cost to the consumer.¹⁷ When this formula is applied to the cost of the complex processing necessary for open architecture, it is clear that a very serious additional expense would result for consumers.

Understandably, manufacturers do not want to add in the costs of multiple circuit cards, or processing, without some assurance that such a television set will be competitive. Universal need and use of a particular feature can guarantee a manufacturer such marketplace acceptance, however, that will not be present in this case because not all consumers will need, want

¹⁷ Availability and Cost of Consumer Advanced Television (ATV) Technology, a report prepared by Booz, Allen & Hamilton Inc. for Home Box Office Inc. (July 26, 1988).

or be willing to purchase such expensive processing. In fact, the Electronic Industries Association (EIA) opposes an open architecture approach.¹⁸ Furthermore, such an approach will delay the introduction of ATV to American consumers as they await not only the development of systems but the manufacture of expensive television sets encompassing all possibilities.

A second approach to accommodating different ATV systems requires manufacturers to build television sets which leave space, or receptacles, for future insertion of additional circuit cards for different ATV signals. This approach allows the television set to be customized for particular signals. However, this approach is also costly from the manufacturer's -- and thus, the consumer's -- point of view. This type of television set requires a larger cabinet, a stronger power supply, and room for receptacles consumers may never use. There are also very serious safety and warranty concerns about customer installation of modules manufactured by third parties. This approach would also delay the introduction of ATV to consumers since manufacturers would be reluctant to build television sets of this type.

The third, and preferred, approach to accommodating different ATV systems in the television set is through

¹⁸ See Letter to Chairman Dennis Patrick from Gary J. Shapiro and Eb Tingley, Consumer Electronics Group of the Electronic Industries Association (June 30, 1988) ("EIA Letter").

"multiport" interfaces. Multiport interfaces exist today to allow television sets to receive signals from over-the-air, cable, satellite, and VCRs. Simple and inexpensive, such interfaces can be adapted to accommodate different ATV signals. The consumer's television set would actually be a monitor (its tuner continues to be a standard NTSC tuner, or receiver) with a picture tube, power supply, minimal signal processing circuitry, and cabinet. "Dumb" as to ATV signal transmission formats, the television set would have a "plug-in" connector, or interface, easily and safely accessible to the consumer on the set-top or on the back of the display,¹⁹ to handle ATV signals which are delivered to the interface from the converter box. The connector gives each ATV signal, or source, access to the color guns (RGB) and other consumer features in the television set.

When Time Inc. and others first proposed that such an interface be adopted, it was believed that a "lowest common denominator standard interface" would be adequate, i.e., one that accessed the color guns and few other consumer features. However, after discussions with manufacturers, Time Inc. believes that a higher level of connection -- access to more consumer features -- is desirable and feasible. Such an interface is more consumer-friendly since it allows the consumer to control more of the features of his TV set -- color, hue, volume, picture

¹⁹ Later, television sets could have such connectors built into the cabinet and could also include a broadcast ATV tuner.

intensity and the more advanced features future television sets will offer, such as digital audio. An enhanced, or advanced, form of interface exists today in the IS-15 connector, which can be further adapted to accommodate different ATV signals.²⁰

Another type of advanced connector is that used to allow VHS television sets to display Super VHS pictures from a Super VHS VCR; this is more sophisticated than the standard VCR to television connector and is in use today. Since the EIA currently supports the use of the IS-15 connector, manufacturers should be willing to expand the functionality of the IS-15 to accommodate ATV signals.

It is difficult to estimate current costs for particular parts of television sets since the television manufacturing business is competitive and costs are generally not divulged by manufacturers. However, it is generally assumed that the cost of baseband interfaces and the IS-15 is quite low because such interfaces are included by manufacturers today for current television receivers.²¹ Moreover, costs can be kept low when the

²⁰ The EIA's IS-15 provides a standard baseband (audio and video) interface between NTSC TV sets and peripheral devices and is discussed in the Tentative Decision (para. 130, fn. 140, 155). EIA states that the IS-15 is undergoing revision to handle Y/C video (luminance/chrominance) and pay-per-view. EIA believes that an ATV multiport is "worthy of careful consideration." EIA Letter, supra, n. 18.

²¹ A multiport interface adds few active components to the television set and requires minimal internal electronics. The major hardware cost for such an interface is the connector itself and some circuitry required to isolate internal signals (for

connector design is incorporated into the receiver at an early stage of design. Time Inc. believes the cost increment of an interface to accommodate different ATV signals would be low and one that manufacturers should support and plan for at an early stage.²²

Using a multiport interface to accommodate different ATV signals will allow the benefits of ATV systems to be available to the public in the earliest possible time frame without harming any video distribution medium. This approach to compatibility among different ATV systems -- interoperability -- thus serves the public interest best. Time Inc. agrees with the Commission's Tentative Decision²³ that the introduction of ATV for non-broadcast media should not be delayed and that interoperability among alternative media may be achieved "easily and inexpensively" via multiport devices and without Commission intervention. Each video distribution medium -- broadcast, cable, satellite and VCR -- will benefit from this approach. The real winner, however, will be the American consumer, who will enjoy the advantages of advanced television without undue cost,

safety, for example), reduce the potential for interference and connect the interface to signal format converters.

²² Working Party 4 (Alternative Media Technology and Broadcast Interface) of the Advisory Committee has submitted a paper to the Advisory Committee providing technical descriptions and characteristics of an ATV multiport.

²³ Tentative Decision at para. 133.

delay, or diminution in quality.

V. A 6 MHz Broadcast ATV System Would Be Optimal for
Consumers, Broadcasters and Cable Operators

Few parties doubt that television viewers would receive a high quality picture, while broadcasters and cable operators would incur minimal expense and operational difficulties, if an NTSC-compatible broadcast ATV service could be offered in the same 6 MHz of spectrum broadcasters now use to transmit NTSC signals.²⁴ A 6 MHz system would have the least impact on the millions of television sets now in use, as well as broadcasters' transmission facilities and cable operators' plants.²⁵ Ideally, such a system would allow both viewers of over-the-air signals and cable customers to receive a picture of today's quality on NTSC television sets and a superior picture on new sets equipped to receive ATV signals, while requiring little reconfiguration to transmission facilities.

The Commission has recognized the clear advantages of a 6 MHz broadcast ATV standard. It stated that such a system "is expected to have only a relatively small economic impact on broadcasters, cable operators and consumers.... [It] would not

²⁴ See Time Inc. Reply Comments in MM Docket 87-268, filed Jan. 19, 1988 at 7.

²⁵ See Time Inc. Comments at 13.

require broadcasters to replace or add transmitters, nor would it require cable operators either to expand channel capacity or to discontinue any existing service.... [W]e believe that the transition to [ATV] might occur more rapidly than otherwise if a 6 MHz NTSC compatible ATV transmission option were implemented."²⁶

The Commission noted that with the technology currently under study, a 6 MHz system for broadcast ATV may not be able to provide the level of picture quality that a system using more spectrum would offer.²⁷ However, the Commission also stated that "the degree of qualitative improvement associated with systems that use greater bandwidth and the value consumers place on these improvements is not known."²⁸ Of course, any proposed 6 MHz system for broadcast ATV must be tested in actual field conditions for both broadcast and cable carriage. Until the results of such tests are known and additional consumer research elucidates the level of performance viewers will want and the concomitant price they will pay, the Commission should not take any action which precludes development of a 6 MHz ATV system.²⁹

²⁶ Tentative Decision at paras. 84, 85.

²⁷ Id. at para. 86.

²⁸ Id.

²⁹ As cable penetration increases and more homes are passed, which is likely before broadcast HDTV generally is available, it may be practical to consider utilizing an augmentation channel fed directly from a broadcaster to a cable headend. This would

Time Inc. recognizes that no system yet has been demonstrated which will allow broadcasters to offer true ATV in 6 MHz and that also is compatible with NTSC sets. However, several parties have explained that there are grounds to be optimistic that such a result can be achieved,³⁰ and it may be that the Commission's urging or requiring a 6 MHz standard for broadcast ATV will encourage productive research toward that end.

A concerted effort to develop such a system is important to cable television. As the Commission stated, a very serious problem is created for cable operators who would be forced to find room on their "large but finite bandwidth..., [which] today ...[is] operating at or near full capacity,"³¹ in order to accommodate the additional spectrum space required if broadcast ATV utilizes more than 6 MHz. It would be very costly for cable systems to add 3 MHz or 6 MHz for each of the many broadcast

allow transmission of a superior quality broadcast HDTV signal to the home, where HDTV -- best seen on a large screen placed several feet in front of the viewer -- is most likely to be viewed. It would preclude the necessity of the Commission's finding additional over-the-air spectrum, but still would permit broadcasters to offer true HDTV to the majority of their audiences.

³⁰ Currently, research into the development of NTSC-compatible 6 MHz broadcast ATV systems is being undertaken by Prof. William F. Schreiber of the Massachusetts Institute of Technology and by the Del Rey Group.

³¹ Tentative Decision at para. 45.

signals they carry.³² Dropping program services now offered to cable customers in order to use more spectrum space for broadcast ATV signals is not a viable alternative for either cable operators or cable customers.³³ Carrying only selected broadcast stations which are transmitting in ATV to reduce additional spectrum space needed by the systems also is not an attractive choice.³⁴

Moreover, the problem for cable is compounded if the additional spectrum must be contiguous with the 6 MHz channel already used for the broadcast signal. The slight non-linearities of cable plant equipment cause the carriers of television signals to intermodulate and create a "picket fence" of spurious signals. Cable currently arranges the NTSC signals so they fall in the "blank" spots of the picket fence. Spectrum of 9 MHz or 12 MHz would experience the picket fence in the middle of its band, resulting in unpleasant interference patterns on the consumers' screen. Avoiding this problem would be extremely expensive, even if it were feasible.

Likewise, if the additional 3 MHz or 6 MHz spectrum were not contiguous, differences in propagation characteristics would

³² See id.

³³ See Time Inc. Comments at 14-15.

³⁴ Id.

cause unequal distortions in the two parts of the signal. If the additional spectrum contained the information for the side panels of the wide aspect ratio used in most proposed ATV systems, the seam between the panels and the main picture may be more visible because of such effects. Further, two tuning, automatic gain control and intermediate frequency amplifiers likely would be required for non-contiguous operation. In essence, two receivers are required. This presents problems of expense and critical performance matching of the two receivers.

Also, the Commission took note of Time Inc.'s concerns that broadcast signals of greater than 6 MHz, particularly if the augmentation channel were non-contiguous, may create significant problems with harmonically related carriers used by cable systems to minimize interference beats, as well as causing ghosting and airplane flutter.³⁵ Use of more than 6 MHz for broadcast ATV also likely would cause problems for the cable relay (CARS) services, which would require additional spectrum to carry expanded signals.³⁶

If the Commission ultimately determines that more than 6 MHz is necessary for broadcast ATV, cable's choice is difficult. An

³⁵ Tentative Decision at para. 45; See Time Inc. Comments at 14.

³⁶ See Tentative Decision at para. 97; see also id. at paras. 87-90.

additional 3 MHz is better than an additional 6 MHz from the perspective of spectrum availability. However, 12 MHz will provide better picture quality. Contiguous spectrum is better for receiver economics. Non-contiguous spectrum is better for carriage by cable systems.

Clearly, cable customers would face the least expense and still receive a quality picture, if broadcast ATV were transmitted in 6 MHz. However, before decisions regarding broadcast ATV and its carriage on cable systems are made, considerably more information is required than is available today. It is imperative that studies being conducted by the Commission's Advisory Committee, NCTA's "Blue Ribbon" Committee and its Engineering Committee's Subcommittee on ATV, Cable Labs, the Commission's Office of Engineering and Technology, and research currently being undertaken by other entities be analyzed carefully before definitive steps are taken to establish standards for broadcast ATV. Much remains to be known about broadcast ATV systems which use 6 MHz or more, about contiguous and non-contiguous augmentation channels and about cable's ability to carry ATV signals.

VI. Conclusion

Time Inc. generally supports the Commission's conclusions in its Tentative Decision. Allowing each medium to provide ATV in a